



Attorney Docket No. IMMR-086/02US

PATENT

10/30/2004  
Box 1010

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Louis B. ROSENBERG et al.

Serial No.: 10/782,878

Examiner: Unassigned

Filed: February 23, 2004

Art Unit: 2672

Confirmation No. 7078

For: **DESIGNING FORCE SENSATIONS FOR FORCE FEEDBACK COMPUTER APPLICATIONS**

U.S. Patent and Trademark Office  
 220 20<sup>th</sup> Street S.  
 Customer Window  
 Crystal Plaza Two, Lobby, Room 1B03  
 Arlington, VA 22202

## INFORMATION DISCLOSURE STATEMENT TRANSMITTAL

Enclosed is an Information Disclosure Statement and accompanying Form PTO/SB/08A for the above-identified patent application.

- In accordance with 37 C.F.R. §1.97(b), no additional fee for submission of the IDS is required.
- In accordance with 37 C.F.R. §1.97(c), also enclosed is:
  - the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p); or
  - a statement as specified in 37 C.F.R. §1.97(e).
- In accordance with 37 C.F.R. §1.97(d), a statement as specified in 37 C.F.R. §1.97(e) and the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p) are also enclosed.
- Check No. \_\_\_ in the amount of \$\_\_\_ for the total fee is attached.
- A return receipt postcard is also enclosed.
- Please charge \$\_\_\_ to Deposit Account No. 50-1283 for the total fee. This paper is being submitted in duplicate.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1283.

Dated: October 7, 2004

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Respectfully submitted,  
**COOLEY GODWARD LLP**

By:

  
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Erik B. Milch  
Reg. No. 42,887

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Serial No.: 10/782,878

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**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 C.F.R. §1.97(b)**

In accordance with the duty of disclosure set forth in 37 C.F.R. §1.56,  
Applicant(s) hereby submits the following information in conformance with 37 C.F.R.  
§§1.97 and 1.98.

- Pursuant to 37 C.F.R. §1.98, a copy of each document cited in the attached Form PTO/SB/08A (1 of 2) is provided on the enclosed CD.
- No copies of the publications listed on the attached Form PTO/SB/08A (2 of 2) are being provided pursuant to 37 C.F.R. §1.98(d) because the publications were previously cited by or submitted to the Office in prior Application Serial Nos. 09/734,630 (now U.S. Patent No. 6,697,086 B2), 08/846,011 (now U.S. Patent No. 6,147,674) and/or 08/566,272 (now U.S. Patent No. 5,734,373) to which the above-identified application claims priority under 35 U.S.C. §120.
- No copies of any U.S. patents or U.S. patent application publications listed on the attached Form PTO/SB/08A are being provided pursuant to 37 C.F.R. §1.98 because this application was filed after June 30, 2003.
- Publication(s) \_\_\_\_ listed on the attached Form PTO/SB/08A were cited in a foreign search or examination report corresponding to \_\_\_\_ application serial no. \_\_\_\_ and mailed on \_\_\_\_.
- Enclosed is a copy of a non-English publication(s) \_\_\_. Pursuant to §609 of the M.P.E.P., Applicant submits the attached foreign search or examination report, which cites such non-English language publication(s).

- Enclosed is a copy of a non-English publication(s) \_\_\_. English language publication \_\_\_ (copy enclosed) claims priority from this non-English publication.
- Enclosed is an explanation of non-English publication(s) \_\_ for which an English translation is not available.
- Enclosed is an English translation of non-English publication(s) \_\_ cited in the attached Form PTO/SB/08A.
- Enclosed is a copy of pending patent Application Serial No. \_\_\_\_.

This Information Disclosure Statement is filed within any one of the following time periods:

- within three months from the filing date of this national application other than a CPA under 37 C.F.R. § 1.53(d);
- within three months from the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in this international application;
- before the mailing date of a first office action on the merits; or
- before the mailing of a first office action after the filing of a request for continued examination under 37 C.F.R. § 1.114.

It is respectfully requested that the Examiner consider the above-noted information and return an initialed copy of the attached Form PTO/SB/08A to the undersigned.

Dated: October 7, 2004

Respectfully submitted,  
COOLEY GODWARD LLP

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By:

  
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Erik B. Milch  
Reg. No. 42,887



(1 of 2)

PTO/SB/08A (10-01)

Approved for use through 10/31/2002. OMB 0651-0031

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Substitute for form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

1

of 3

**Complete if Known**

Application Number	10/782,878
Filing Date	February 23, 2004
First Named Inventor	Louis B. Rosenberg
Art Unit	2672
Examiner Name	Unassigned

Attorney Docket Number

IMMR-086/02US

### U.S. PATENT DOCUMENTS

Examiner	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
		6,422,941		7/23/2002	Thomer et al.	
		6,160,489		12/12/2000	Perry et al.	
		6,111,577		8/29/2000	Zilles et al.	
		5,690,582		11/25/1997	Ulrich et al.	
		5,575,761		11/19/1996	Hajianpour	
		5,437,607		8/1/1995	Taylor	
		5,436,622		7/25/1995	Gutman et al.	
		5,283,970		2/8/1994	Aigner	
		5,186,695		2/16/1993	Mangseth et al.	
		5,175,459		12/29/1992	Danial et al.	
		5,165,897		11/24/1992	Johnson	
		5,022,384		6/11/1991	Freels	
		4,885,565		12/5/1989	Embach	
		4,484,191		11/20/1984	Vavra	
		4,464,117		8/7/1984	Foerst	
		4,333,070		6/1/1982	Barnes	
		4,262,549		4/21/1981	Schwellenbach	
		4,127,752		11/28/1978	Lowthorp	
		2,972,140		2/14/1961	Hirsch	

Examiner Initials <sup>*</sup>	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
		JP	H2-185278		7/19/1990	Taito Corporation	
		JP	H4-8381		1/13/1992	Epoch Co. and Key-Planning Co.	
		JP	H7-24147		1/27/1995	Sega Corporation	
		JP	H5-192449		8/3/1993	Taito Corporation	

Examiner Signature	Date Considered
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<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Kind Codes of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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				Art Unit	2672
				Examiner Name	Unassigned
Sheet	2	of	3	Attorney Docket Number	IMMR-086/02US

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS					
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.			
		PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for Interaction with Virtual and Remote Environments," <i>Master of Science Thesis</i> , MIT, Aug. 1990, archived Nov. 8, 1990.			
		CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," <i>Bachelor of Science Thesis</i> , MIT, May 1983, archived June 23, 1983.			
		WIKER, "Teletouch Display Development: Phase 1 Report," <i>Technical Report 1230</i> , Naval Ocean Systems Center, San Diego, July 1988.			
		BLISS, "Optical-to-Tactile Image Conversion for the Blind," <i>IEEE Transactions on Man-Machine Systems</i> , Vol. MMS-11, No. 1, March 1970.			
		JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," <i>Armstrong Aerospace Medical Research Laboratory</i> , AAMRL-TR-90-039, August, 1990.			
		KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," <i>PRESENCE</i> , 4(4):387-402, Harvard Univ., 1995.			
		AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.			
		EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," <i>DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1</i> , ASME 1994.			
		GOBEL et al., "Tactile Feedback Applied to Computer Mice," <i>International Journal of Human-Computer Interaction</i> , Vol. 7, No. 1, pp. 1-24, 1995.			
		PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.			
		"Cyberman Technical Specification," <i>Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide</i> , 4/5/1994.			
		OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," <i>Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95</i> , Seoul, Korea, 21-24 August 1995.			
		KACZMAREK et al., "Tactile Displays," <i>Virtual Environment Technologies</i> , Chap. 9, pp. 349-414.			
		LAKE, "Cyberman from Logitech," at <a href="http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html">http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html</a> , 1994.			
		"Component Maintenance Manual With Illustrated Parts List, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 28 January 2002 (3 pages).			
Examiner Signature		Date Considered			

<sup>1</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449A/PTO		<b>Complete if Known</b>		
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>		Application Number	10/782,878	
Sheet	3	Filing Date	February 23, 2004	
		First Named Inventor	Louis B. Rosenberg	
		Art Unit	2672	
		Examiner Name	Unassigned	
		Attorney Docket Number	IMMR-086/02US	

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
		"Technical Manual Overhaul Instructions With Parts Breakdown, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 15 July 1980 (23 pages).	
		SCANNELL, "Taking a Joystick Ride," Computer Currents, Boston Edition, Vol. 9, No. 11, November 1994	
		ROSENBERG, "Virtual Fixtures: Perceptual Overlays Enhance Operator Performance In Telepresence Tasks," Ph.D. Dissertation, Stanford University, June 1994.	

Examiner Signature	Date Considered
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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

1

of

11

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Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
		2,906,179	09-1959	Bower	
		3,490,059	01-1970	Paulsen et al.	
		3,531,868	10-1970	Stevensen	
		3,875,488	04-1975	Crocker et al.	
		3,890,958	06-1975	Fister et al.	
		3,919,691	11-1975	Noll	
		3,944,798	03-1976	Eaton	
		4,125,800	11-1978	Jones	
		4,148,014	04-1979	Burson	
		4,216,467	08-1980	Colston	
		4,398,889	08-1983	Lam et al.	
		4,448,083	05-1984	Hayashi	
		4,477,043	10-1984	Repperger	
		4,477,973	10-1984	Davies	
		4,550,221	10-1985	Mabusth	
		4,550,617	11-1985	Fraignier et al.	
		4,571,834	02-1986	Fraser et al.	
		4,593,470	06-1986	Davies	
		4,601,206	07-1986	Watson	
		4,632,341	12-1986	Repperger et al.	
		4,638,798	01-1987	Sheldon et al.	
		4,653,011	03-1987	Iwano	
		4,654,648	03-1987	Herrington et al.	
		4,676,002	06-1987	Slocum	
		4,679,331	07-1987	Koontz	
		4,688,983	08-1987	Lindbom	
		4,703,443	10-1987	Moriyasu	
		4,704,909	11-1987	Grahn et al.	
		4,750,487	06-1988	Zanetti	
		4,769,763	09-1988	Trieb et al.	
		4,787,051	11-1988	Olson	
		4,791,934	12-1988	Brunnett	
		4,798,919	01-1989	Miessler et al.	
		4,800,721	01-1989	Cemenska et al.	
		4,803,413	02-1989	Kendig et al.	

Examiner  
SignatureDate  
Considered

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<b>U.S. PATENT DOCUMENTS</b>					
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		4,811,608	03-1989	Hilton	
		4,819,195	04-1989	Bell et al.	
		4,839,838	06-1989	LaBiche et al.	
		4,849,692	07-1989	Blood	
		4,868,549	09-1989	Affinito et al.	
		4,879,556	11-1989	Duimel	
		4,888,877	12-1989	Enderle et al.	
		4,891,889	01-1990	Tomelleri	
		4,896,554	01-1990	Culver	
		4,907,970	03-1990	Meenen, Jr.	
		4,907,973	03-1990	Hon	
		4,935,728	06-1990	Kley	
		4,942,545	07-1990	Sapia	
		4,945,305	07-1990	Blood	
		4,945,501	07-1990	Bell et al.	
		4,961,138	10-1990	Gorniak	
		4,961,267	10-1990	Herzog	
		4,962,591	10-1990	Zeller et al.	
		4,982,504	01-1991	Soderberg et al.	
		4,983,786	01-1991	Stevens et al.	
		5,007,085	04-1991	Greanias et al.	
		5,007,300	04-1991	Siva	
		5,040,306	08-1991	McMurtry et al.	
		5,044,956	09-1991	Behensky et al.	
		5,050,608	09-1991	Watanabe et al.	
		5,072,361	12-1991	Davis et al.	
		5,076,517	12-1991	Ferranti et al.	
		5,088,046	02-1992	McMurtry et al.	
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		5,095,303	03-1992	Clark et al.	
		5,103,404	04-1992	McIntosh	
		5,107,080	04-1992	Rosen	
		5,116,051	05-1992	Moncrief et al.	
		5,116,180	05-1992	Fung et al.	
		5,126,948	06-1992	Mitchell et al.	

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

**3**of **11****Complete if Known**

Application Number	10/782,878
Filing Date	February 23, 2004
First Named Inventor	Louis B. Rosenberg
Art Unit	2672
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		5,128,671	07-1992	Thomas, Jr.	
		5,131,844	07-1992	Marinaccio et al.	
		5,132,672	07-1992	Clark	
		5,139,261	08-1992	Openiano	
		5,142,506	08-1992	Edwards	
		5,142,931	09-1992	Menahern	
		5,143,505	09-1992	Burdea et al.	
		5,146,566	09-1992	Hollis, Jr. et al.	
		5,148,377	09-1992	McDonald	
		5,178,012	01-1993	Culp	
		5,181,181	01-1993	Glynn	
		5,182,557	01-1993	Lang	
		5,184,306	02-1993	Erdman et al.	
		5,184,319	02-1993	Kramer	
		5,185,561	02-1993	Good et al.	
		5,186,629	02-1993	Rohen	
		5,187,874	02-1993	Takahashi et al.	
		5,189,806	03-1993	McMurty et al.	
		5,193,963	03-1993	McAfee et al.	
		5,204,824	04-1993	Fujimaki	
		5,209,131	05-1993	Baxter	
		5,220,260	06-1993	Schuler	
		5,223,776	06-1993	Radke et al.	
		5,228,356	07-1993	Chuang	
		5,230,623	07-1993	Guthrie et al.	
		5,235,868	08-1993	Culver	
		5,243,266	09-1993	Kasagami et al.	
		5,251,127	10-1993	Raab	
		5,251,156	10-1993	Heier et al.	
		5,259,120	11-1993	Chapman et al.	
		5,259,894	11-1993	Sampson	
		5,262,777	11-1993	Low et al.	
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		5,289,273	02-1994	Lang	

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>		Application Number	10/782,878
		Filing Date	February 23, 2004
		First Named Inventor	Louis B. Rosenberg
		Art Unit	2672
		Examiner Name	Unassigned
Sheet	4	of	11
		Attorney Docket Number	IMMR-086/02US

<b>U.S. PATENT DOCUMENTS</b>					
Examiner	Cite No. <sup>1</sup>	Document Number Number Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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		JP	4-34610				
		GB	2254911				
		WO	9520787				
		WO	9616397				
		WO	9622591				

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Sheet	6	of	11	Filing Date	February 23, 2004
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	WO	9642078					
	EP	0626634		A2			
	EP	0875819		A1			
	WO	9502801					
	WO	9520788					
	WO	9532459					
	WO	9731333					

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		Smith, Geoffrey, "Call It Palpable Progress," Business Week, Oct. 9, 1995, pp. 93, 96.
		Snow, E. et al., "Compact Force-Reflecting Hand Controller," JPL, Apr. 1991, vol. 15, No. 3, Item No. 153, pp. 1-15a.
		Su, S. Augustine et al., "The Virtual Panel Architecture: A 3D Gesture Framework," IEEE 1993, pp. 387-393.
		Tan, Hong et al., "Human Factors for the Design of Force-Reflecting Haptic Interfaces," MIT, 1994.
		Tavkhelidze, D.S., "Kinematic Analysis of Five-Link Spherical Mechanisms," Mechanism and Machine Theory, 1974, vol. 9, pp. 181-190.
		Wiker, Steven F. et al., "Development of Tactile Mice for Blind Access to Computers: Importance of Stimulation of Locus, Object Size, and Vibrotactile Display Resolution," Proceedings of the Human Factors Society 35th Annual Meeting 1991, pp. 708-712.
		Winey III et al., "Computer Simulated Visual & Tactile Feedback as an aid to Manipulator & Vehicle Control," MIT, 1981, pp. 1-79.

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